Foundation Course

SECTION 11

Consolidation Exercise

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1.   Consolidation Exercise

Now you have learned the basics of Blue Prism configuration, you will put this knowledge into practice by building and running a Process end-to-end.

Key Point

◆   To reach a standard recognized by Blue Prism that will allow you to progress to the next stage of your certification, you must complete the exercises in this section to Blue Prism's satisfaction. Details of how to submit your completed Blue Prism Solution for review can be found at the end of this guide.

1.1   Centrix Data Solutions Process

The following exercises will guide you towards creating a Process that can place orders in the *Centrix Data Solutions* application. The exercises are deliberately less explanatory to encourage you to think about what you have learned so far and put this into practice.

The basic steps the Process will take are as follows:

- Read a CSV file containing order information.
- Load the information into a Work Queue.
- Launch *Centrix Data Solutions*.
- Work through the Work Queue Items creating orders.
- Close *Centrix Data Solutions*.

The first two exercises of the Consolidation Exercise are essentially identical in outcome, achieving the same result via two separate methods. If you have Excel installed, then complete Exercise 11.1.1, otherwise complete Exercise 11.1.2.

Please, only complete either Exercise 11.1.1 *OR* Exercise 11.1.2, before progressing on to the remaining exercises.

Exercise 1.1.1 Reading from Excel

There is an Excel Business Object available that you can use to read a CSV file and there is a ready-made file you can use too.

Blue Prism ships a number of standard Business Objects that can be imported into your Object library. These Objects cover a range of interfaces and utilities and can be found in *C:\Program Files\Blue Prism Limited\Blue Prism Automate\VBO*.

To install the Excel interface Object, click *File* > *Import* and then select the *BPA Object - MS Excel.xml file* from the above VBO directory. If you have installed Blue Prism version 6.7 or above, you need to select Import Process/Object from the File menu.

- The Business Object is named *MS Excel VBO*.

- The file is named *Orders.csv* and is in *C:\BluePrism\Training\Applications\ Windows*.

- The sequence of Actions is as follows:

- *Create Instance* to start a session of Excel.

- *Show* to make it visible (it's invisible by default).

- *Open Workbook* to open the file.

- *Get Worksheet as Collection (Fast)* to read the data.

- *Exit* to close Excel.

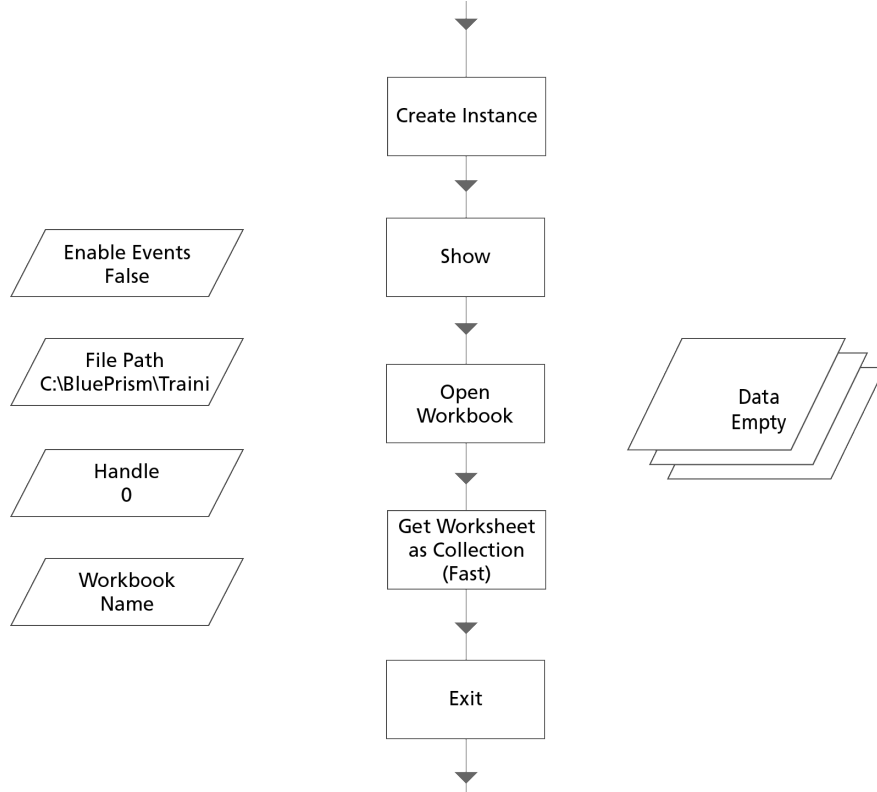- Begin a new Process named *Create Orders*. It should look something like this:

FIGURE 203: CREATE ORDERS PROCESS

- **Test that the Process can open the CSV file and retrieve the data. If successful, the Data Collection will no longer be empty.**

Exercise 1.1.2   Reading from a CSV (comma-separated values) File

There is a Business Object available that you can use to read a CSV file, and there is a ready-made file you can use too.

Blue Prism ships a number of standard Business Objects that can be imported into your Object library. These Objects cover a range of interfaces and utilities and can be found in *C:\Program Files\Blue Prism Limited\Blue Prism Automate\VBO*.

To install the Business Object to read from a CSV file, click *File* > *Import* and then select the *BPA Object – Utility – File Management.xml* file from the above VBO directory.

- The Business Object is named *Utility – File Management*.

- The file is named *Orders.csv* and is in *C:\BluePrism\Training\Applications\ Windows*.

- You will need to use the following actions from the *Utility – File Management* Business Object to read the *Orders.csv* file:

  o   *File Exists*
  o   *Get CSV Text As Collection*

- Begin a new Process named *Create Orders*.

- Create a Page in your new Process to read the data from the *Orders.csv* file.
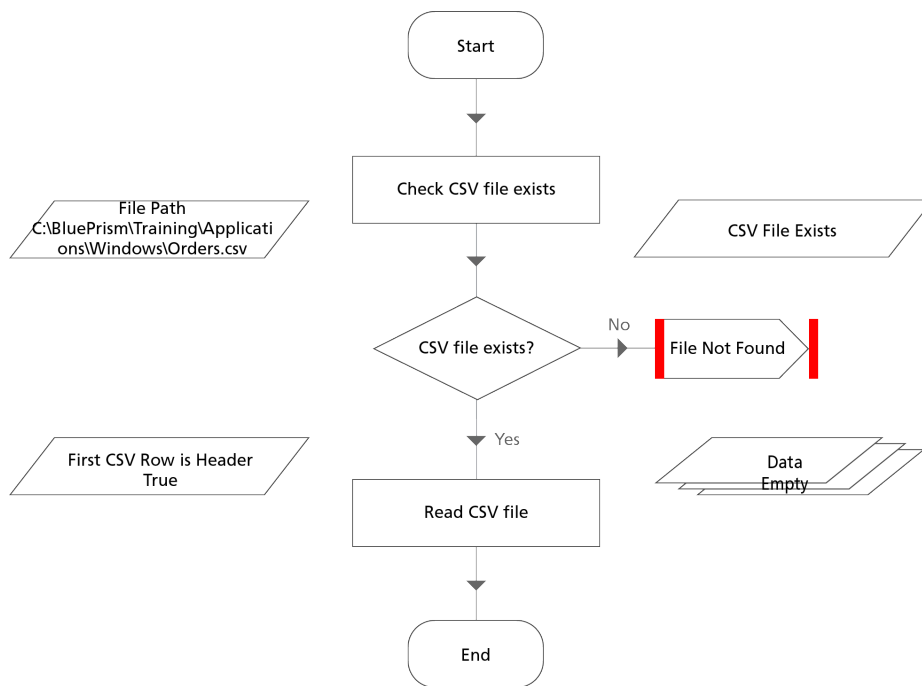
- It should look something like this:

FIGURE 204: CREATE ORDERS PROCESS

- **Test that the Process can open the CSV file and retrieve the data. If successful, the Data Collection will no longer be empty.**

Exercise 1.1.3 Loading the Work Queue

Continue working on your *Create Orders* Process so that it will load the CSV data into a Work Queue.

- Make a new Work Queue.

- Use the *Internal – Work Queues* Business Object to put the CSV data into the queue.

- Test your Process. Check the data is being written to the Work Queue - this can be viewed in Control Room.

Exercise 1.1.4 Working the Items

Continue working on your *Create Orders* Process so that it will work through the queue. For now, you are simply pretending to work by simulating Work Queue functionality.

- Have your Process get the next Pending Item from the queue (you'll need to create some Data Items for the Outputs).

- Check to see if an Item has been returned.

- Mark a returned Item in the queue as 'Complete'.

- Loop back to get the next Pending Item and repeat until no Item is returned and the Process can progress to the end.

△ Tip: The file only has fifteen orders in it, so don't worry about importing the file and 'processing' the orders more than once.

Exercise 1.1.5 Launching *Centrix Data Solutions*

Continue working on your *Create Orders* Process so that it will launch and close the *Centrix Data Solutions* application.

- Launch and log in to *Centrix Data Solutions*, soon after the start of the Process. Perform this on the Main Page.

- Close *Centrix Data Solutions* just before the end of the Process, i.e. when no more Items are returned from the Work Queue.

- Exception Handling - it is important that if you can't successfully start *Centrix Data Solutions* then you DON'T proceed with the Process. Create a Block around the *Centrix Data Solutions* launch and login sequence and use a Recover Stage to catch any Exception Thrown. If you then Re-throw this Exception, the Process will fail as you are Throwing an Exception on the Main Page.

  Δ   Tip: It would be inefficient to launch and close for every Item.

  Δ   Tip: Remember the purpose of the *Preserve* check box in the Exception Stage properties.

Exercise 1.1.6   Going Further into *Centrix Data Solutions*

Now, observe how a user would manually submit an order, before you automate the steps:

- Log in to *Centrix Data Solutions* using your *Centrix Data Solutions – Basic Actions* Business Object.

- Familiarize yourself with the application by manually inputting a few orders.

  Δ   Tip: You can use whichever data you like, as long as all fields are completed.

Exercise 1.1.7   Updating the *Centrix Data Solutions - Basic Actions* Business Object

Once you understand the steps required to put an order into *Centrix Data Solutions*, update your Business Object. You will be adding a new Action (Page) to your Object.

Below, is a summary of the Page that your Business Object will need:

Action	Inputs	Outputs	Precondition	Post Condition
Navigate Menu			Home window	Orders Menu window

When creating Elements in Application Modeller, remember to use the tree structure and group Elements by the screen or section they are in. This will make locating Elements in a busy Application Modeller much easier.

When building and testing your Solution, you may find that some Elements can no longer be found by Application Modeller.

• **Remember when Spying new Elements, to use *Highlight* and to adjust the Element Attributes accordingly, to make the Element unique.**

• **Check the Window Text Attribute. Take care matching on this Attribute, as the value may change as the Business Object runs.**

Exercise 1.1.8 Action - Navigate Menu

• **Add a new Page to navigate to the option menu named *Navigate Menu*.**

• **Your pre-condition is that you are on the *Home* window. When the Action starts, wait for an Element that will be available on the *Home* window. Set a Timeout period and Throw a System Exception if the Timeout expires.**

• **Click the relevant button in the left-hand menu.**

• **Your post-condition is that you are on the Order Menu screen.**

△ **Tip: You will need to press the *ORDERS* button to access the *Orders Menu*.**

• **Your Action will need to be published, if it is to be visible to a Process.**

Exercise 1.1.9 Updating the *Centrix Data Solutions - Order Processing Business Object*

Now you have made the changes to the *Basic Actions* Business Object, you will need to make changes to the *Orders Processing* Object to perform the order input and order confirmation functions.

Below, is a summary of the Pages your Business Object will need:

Actions	Inputs	Outputs	Precondition	Post Condition
Input Orders	Product Code Unit Price Quantity Cust Acct No. Priority Order		New Order Window	Order Confirmed screen has opened
Order Confirmation		Order Confirmation Number	Order Confirmed screen	Order Confirmed screen has closed

Exercise 1.1.10 Action - Input Order

- Add a new Page named *Input Order*.

- Set the Input Parameters.

- Your pre-condition is that you are on the *New Order* Page. When the Action starts, wait for an Element that will be available on the *New Order* Page. Set a Timeout period and Throw a System Exception if the Timeout expires.

FIGURE 205: ORDER INPUT

- **Use the Input Parameters to create the order and press *Submit*.**

> ⚠ **Tip: When a user interacts with a form field which is displayed as a drop-down list, they would use their mouse. Blue Prism will do the same through the use of the Navigate stage.**
>
> ⚠ **Tip: Remember there is no data validation in *Centrix Data Solutions*. When building your Page, use fictitious data as current values in your Data Items to test your Solution.**

- **Your post-condition is that you are on the *Order Confirmed* screen. Once the order has been submitted, wait for an Element that will be available on the *Order Confirmed* screen. Set a Timeout period and Throw a System Exception if the Timeout expires. You may need a long Timeout here, to absorb any system latency. You can throw a System Exception here, because you know the training system allows any data. In practice, you would probably Throw a Business Exception and determine the Exception Reason from the application error message e.g. *"invalid product code, product out of stock"*.**

- **Your Action will need to be published if it is to be visible to a Process.**

Exercise 1.1.11   Action - Order Confirmation

- Add a new Page to navigate to the option menu named *Order Confirmation*.

- Set the Output Parameter.

- Your pre-condition is that you are on the *Order Confirmed* screen. When the Action starts, wait for an Element that will be available on the *Order Confirmed* screen. Set a Timeout period and Throw a System Exception if the Timeout expires. This is unlikely as you are waiting for the screen in the previous Action. However, it is best practice to wait at the start of the Action and confirm the screen you are on.

- Retrieve the order number from the screen and click *OK*.

Δ   Tip: Use the *Text* functions in a Calculation Stage to extract the number from the confirmation text.

- The post-condition is that the *Order Confirmed* screen has closed. Add a Wait Stage to wait for the screen to close.

Δ   Tip: You waited at the start of the Action for the *Order Confirmed* screen. Simply reverse this logic. i.e. *check exists = False*.

- Your Action will need to be published if it is to be visible to a Process.

Exercise 1.1.12   Updating the *Create Orders* Process

Return to your *Create Orders* Process and make use of the new Actions within the Business Objects. Enable your Process to perform the following steps:

1.   Add the data in the CSV file to the Work Queue

2.   Log in to *Centrix Data Solutions*

3.   Attach any supplementary Business Objects

4.   Navigate to the *Orders Menu* using the relevant button from the left menu

5. **Get the next Item from the Work Queue. You must work the Items by retrieving them one at a time from the queue. You DO NOT work the Items by referencing the Collection retrieved from the CSV.**

6. **Navigate to the** *New Order* **screen**

7. *Input* **and** *Submit* **the order**

8. **Get the Order Reference Number**

9. **Mark the Work Queue Item as 'Complete'**

10. **Repeat steps 5-9 for all Items**

11. **Detach any supplementary Business Objects**

12. **Close** *Centrix Data Solutions*

Exercise 1.1.13 Item Exception Handling

You have already added some Exception Handling to the Process to catch any Exception where the Process failed to launch and log in to the *Centrix Data Solutions* application. In this instance, you Throw an Exception from the Main Page to fail the Process, as there is no point in continuing.

Now, you want to handle Item Exceptions. If for any reason an Exception occurs when processing an Item, you must set that Item to an Exception and move onto the next.

• **Add a Block around the following steps:**

• **Navigate to the** *New Order* **screen.**

• *Submit* **the order.**

• **Get the Order Reference Number.**

• **Have a Recover Stage within the Block catch the Exception.**

• **From the Recover Stage, make the Item an Exception before continuing with the next Item.**

- When making an Item an Exception always set the Exception Reason. In this instance, you want the reason to be the Exception detail Bubbled up from the Action.

△   Remember to use a Resume Stage before you continue with the next Item.

Exercise   1.1.14   Testing the Process

- Step through the Process in Process Studio and Object Studio to satisfy yourself that the Process is working correctly.

- Practice using Step, Step Over, and Step Out.

- Use the Go button to the play the Process at different speeds.

- Experiment with Breakpoints.

Exercise   1.1.15   Improving Resilience

Centrix Data Solutions requires that all data fields are completed when inputting an order. What happens if you omit a field?

- Improve the resilience of your Process by ensuring that such Items are marked as 'Exception' without the Process failing.

- After you retrieve the next Item, validate that the required data are present before navigating to the *Create Order* Page.

- If data are missing, make the Item an Exception and carry on.

Exercise 1.1.16 Running in Control Room

- Run the Process in Control Room to see it run end-to-end.

- You must do this five times without the Process failing. If the Process fails, investigate why and apply a fix.

> △ Tip: Remember the Process will need to be published before it can run in Control Room.

Exercise 1.1.17 Analyze the Session Logs

- Recall that you created a Page in the Business Object to identify the Order Reference Number and pass it back to the Process as an Output Parameter.

- Although you didn't use this value in the Process, you should be able to see it in the Session Logs.

Exercise 1.1.18 Package the Process

- Create a Package for the Process and its dependencies, ready for deployment to an alternative environment.

1.2 Consolidation Exercise Checklist

Before submitting your Blue Prism Solution, make sure you have completed the following:

Create Orders Process

Exception Handling is in place for application start-up and log in. ☐

Exception Handling is in place for Item processing. ☐

Process checks for required fields prior to entry into the system. ☐

Process makes the Item an Exception where required data are missing. ☐

Centrix Data Solutions – Basic Actions Business Object

Application Modeller logically laid out. ☐

Log In Action created. ☐

Wait Stage at start of the Action and Exception thrown on Timeout. ☐

Wait Stage at the end to confirm the *Home* window has opened, with Exception thrown on Timeout. ☐

Navigate Menu Action created. ☐

Wait Stage at start of the Action and Exception thrown on Timeout. ☐

Wait Stage at the end to confirm the *Orders Menu* window has opened, with Exception thrown on Timeout. ☐

Centrix Data Solutions – Order Processing Business Object

Application Modeller has been logically laid out. ☐

Navigate Orders Menu Action created. ☐

Wait Stage at the start of the Action and Exception thrown on Timeout. ☐

Wait stage at the end to confirm the *New Order* window has opened, with Exception thrown on Timeout. ☐

Input Order Action created. ☐

Wait Stage at the start of the Action and Exception thrown on Timeout. ☐

Wait stage at the end to confirm the *Order Confirmation* window has opened, with Exception thrown on Timeout. ☐

Order Confirmation Action created. ☐

Wait Stage at the start of the Action and Exception thrown on Timeout. ☐

Action extracts and returns the Order Reference Number. ☐

Wait stage at the end to confirm the *Order Confirmation* window has closed. ☐

Control Room

Process can be run in Control Room a minimum of five consecutive times without failure. ☐

The Order Reference Number is visible in the Session Logs. ☐

Release Manager

Package and Release have been created. ☐

1.3   Submitting Your Completed Solution

Distributed Training (Internal)

If your Foundation Training was set up by your own organization, please consult your local Blue Prism Development Lead.

Independant Learner (Individual)

If you are sitting the Foundation Training as an individual, then please refer to the Example Solution to check your work.

While your work is being reviewed, please continue with Section 12 of the Foundation Training course to learn about the more advanced features of Blue Prism.